frugal innovation

Tanya Sammut-Bonnici and John McGee

Frugal innovation can be defined as the practice of simplifying product components and manufacturing processes into basic elements, in order to redesign both the product and the processes to become more efficient and cost effective. The economic relevance of frugal innovation is the creation of low-cost mass market products that are affordable to all social strata including the less affluent segments.

Through frugal innovation products such as mobile phones, cars and appliances are stripped of irrelevant and costly features. Frugal innovation creates less complex and more streamlined products that are easier to handle and considerably cheaper to produce.

As the price of a frugal product is low, the margin per product is proportionately low. However, the volume of the mass market is vast and the total gains are extraordinarily high.

Cost savings through frugal innovation rely on three ways of reducing expenditure:

- Subcontracting all work except the core business operations. Telecommunication companies typically outsource most of their operations from retail sales, technical repairs, call centers, and billing facilities. Frugal innovation applies to product features as well as production and service processes.
- Utilizing existing technology in imaginative ways. Existing components can be used to create new applications, as was the case of Google infrastructure in its early days.
- Applying mass-production techniques in new and unexpected areas to enter new markets. One example would be to apply management principles in the health industry to bring about a combination of economies of scale and specialization and to reduce the cost of health care radically.

The emerging markets in Asia are known for frugal engineering and frugal innovation. In India, frugal engineering is frequently referred to as "Gandhian engineering," with reference to Mahatma Gandhi's simple life. Gandhian engineering is a system developed at Tata Motors and designed to embrace frugality and to dispel existing paradigms within the production environment. The name originated from Tata Motors' Nano car, a frugal, low-cost, and innovative vehicle reputed as the cheapest car in the world. Frugal innovation has been applied extensively in the mobile phone industry. Phones by Nokia in India cost $20 and perform basic functions such as calls and messaging.

China has made two distinctive contributions to frugal innovation. The first is the use of flexible networks, reflected in *guanxi* or personal connections, which are efficient in reducing costs and increasing flexibility. The principles are to outsource to several suppliers and to encourage the suppliers to engage actively in product innovation. A second area lies in "bandit" or "guerrilla" innovation, created by innovators who copy and modify existing products, benefiting from China's weak property rights. This fringe industry harbors talented innovators, who rapidly produce copies of high-tech gadgets. They produce new products that are cheap enough for low-income workers to be able to afford them, and fashionable enough for young professionals to want them.

Frugal innovation is clearly a newly developed facet of *low-cost strategies* where low cost is achieved through economies of scale and low price then appeals to mass markets. Frugal innovation can also be explained through the *economies of substitution*, demonstrating how technical innovation actually refreshes existing low-cost strategies. It works best when the cost of substituting older components with newer, more technologically advanced components, is lower than the cost of designing the product afresh.

The substitution effect in frugal innovation occurs because of the time lag in the technological development of different components within a product. One example would be the rapid advancement of microchip miniaturization and the less rapid trajectory of battery performance. Technologically advanced components replaced older technologies in the process of product development, while older parts are retained until technology provides better solutions.

The dynamics of economies of substitution and frugal innovation create an intertemporal

Wiley Encyclopedia of Management, edited by Professor Sir Cary L Cooper.

substitution of components and a process of modularity in the design of high-performance products.

Frugal innovation is also referred to as *constraint based* and *reverse* innovation.

See also *cost strategies*; *disruptive innovation*; *economies of substitution*; *innovation strategy*

Bibliography

Prahalad, C.K. (2004) *The Fortune at the Bottom of the Pyramid: Eradicating Poverty through Profits*, Wharton School Publishing, Upper Saddle River, NJ.

The Economist (2010) "First break all the rules: The charms of frugal innovation". The Economist Newspaper Ltd. Apr 15th 2010.

The Economist (2012) "Asian innovation", The Economist Newspaper Limited. Mar 24th 2012.

Tiwari, Rajnish and Herstatt, Cornelius (2012) Assessing India's lead market potential for cost-effective innovations. *Journal of Indian Business Research*, **4** (2), 97–115.